

Introduction to Meteorology

METR 110 (LA, NL2) - Section 2

Class Schedule:

Lecture MW 100-150 PM 314 Science I

Lab T 1000-1150 AM 309 Science I



Course Overview

This course will cover the basic physical processes of the atmosphere as they produce and are related to weather phenomena. These will include weather elements, condensation and precipitation, air masses, fronts, winds, circulation systems, severe storms, interpreting weather maps, and regular discussion of current weather events, including an introduction to climate change. Students will engage in group and individual in-class activities, group laboratory experiences, and mathematical skills modules prior to labs, and are expected to actively pursue the overall goal of becoming more science and, specifically weather, literate.

Instructor

Dr. Todd Ellis - 312 Science I

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(607) 436-2309

Office Hours: M 2-3 pm, T 2-3 pm and by appointment

Student Learning Objectives

As this is a science (NL2) general education course, the following course attributes will be in effect per university guidelines: Students will demonstrate an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis; and application of scientific data, concepts, and models in one of the natural sciences.

Specific to this course, the following objectives describe the specific goals that I will work to help you achieve this semester. Your proficiency in these areas will be assessed throughout the semester using in class discussions, examinations, laboratory work, and out-of-class assignments:

- Students will gain experience with basic physical science and mathematics concepts, including but not limited to measurements, dimensional analysis, reading and interpreting charts and graphs, and forming and testing hypotheses using web modules that will be used as pre-lab exercises;
- Students will be able to observe the weather and understand what the observations mean in terms of current weather and developing forecasts;
- Students will understand basic atmospheric phenomena: how and why they occur and the role they play in the entire scope of how the atmosphere works;
- Students will understand the similarities and differences between weather and climate, how they are related, and how they impact human life - ours and others;
- Students will hone their critical thinking skills to identify, analyze, and evaluate arguments about current weather topics in order to form their own intelligent opinions on weather and climate and to recognize misinformation (deliberate or otherwise) in the world around us.

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Course Structure

This course consists of two lecture sessions and one laboratory session per week. Lecture sessions will be structured to complement reading assignments with demonstrations, active class discussions, and lecture materials meant to highlight important topics. Laboratory sections will feature mini-lectures, demos, and in-class assignments that are designed to be completed by the end of the lab period. **If labs done by the end of lab, they are due 24 hours later. Any late labs are immediately deducted 10% per day unless I have approved an extension PRIOR to class (an email exchange (i.e. you must hear back from me) is fine). No labs will be accepted after I hand them back to class.**

There will also be pre-lab exercises developed by the The Math You Need, When You Need It for some of the labs. These exercises are meant to provide a self-paced review of math concepts that will be used in that week's lab and throughout the rest of the semester in lecture and on exams. These exercises will be counted as 5% of the lab grade for that week, and **must be completed before the Monday lecture preceding that week's lab.** There will be also be a pre- and post-test offered online. These are meant to help you and I to see how well your math skills are developing. The pre-test will count as a 5 point extra-credit on your lowest lab score regardless of your score, and the post-test will be worth up to a 5 point extra-credit on the final exam.

Group Work

During the first lab section, I will ask you to select groups of no more than 4 people for the duration of the semester. Each group will be permitted to work together on weekly lab assignments throughout the semester, though every student must turn in their own work.

Textbook Info

Ahrens, C. Donald, 2008: *Essentials of Meteorology - Fifth Edition*. Thomson Brooks-Cole, Belmont, CA. 485 pp. (REQUIRED)

Grading

40% Weekly Laboratory Assignments (TMYN will count as 5% of that week's lab grade)

10% Attendance and Participation Graded subjectively

MISSING LAB IS A 20% DEDUCTION IN THIS GRADE

15% Midterm Examination I Wednesday, September 21, 2010 - 100-150 PM

15% Midterm Examination II Wednesday, October 27, 2010 - 100-150 PM

20% Final Examination Wednesday, December 15, 2010 - 1100 AM- 130 PM

Comprehensive, with a slight emphasis on the latter portion of the semester

Make up exams will be permitted if I am given timely PRIOR notice. All make-up exams will be in the form of oral examinations.

The SUNY Oneonta Statement on Academic Responsibilities of Students will apply to this course. While group work is a central part of this class, exams are the purview of individual assessment and as such, academic dishonesty will be fully prosecuted according to University policy.

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Outline of Topics and Reading Assignments

	Monday Lecture Topic	Wednesday Lecture Topic	Tuesday Lab	Reading for this week
8/22 - 8/26	NO CLASS	Introduction to Class and overview of TMYN TMYN Pre Test Due Friday	NO CLASS	Ch. 1
8/29 - 9/2	Atmospheric Composition TMYN Quiz 1 Due	Energy in the Atmosphere	Geography and Beginning Isoplething	Ch. 2
9/5 - 9/9	NO CLASS TMYN Quiz 2 Due	Controls on Earth's Temperature	Sun and Earth's Seasons	Ch. 3 and 4
9/12 - 9/16	Evaporation, Condensation, and Humidity TMYN Quiz 3 Due	Humidity, Clouds, and Their Role in Climate	Lapse Rates and Temperature Conversions	Ch. 5
9/19 - 9/23	Remote Sensing of the Atmosphere TMYN Quiz 4 Due	EXAM I	Measurements of Temperature and Humidity	
9/26 - 9/30	Air Pressure and Winds	Air Pressure and Winds	Weather Observation	Ch. 6
10/3 - 10/7	Upper Atmosphere Circulation	Stability and Thunderstorms	Satellite and Radar	Ch. 10
10/10 - 10/14	NO CLASS	NO CLASS	Isobars and Map Analysis (substitute taught)	Ch. 7 and 8
10/17 - 10/21	Severe Thunderstorms and Tornadoes	Air Masses and Fronts	Forecasting Lab	Ch. 9
10/24 - 10/28	Mid-Latitude Cyclones	EXAM II	Biometeorology	
10/31 - 11/4	Winter Weather	General Circulation of the Atmosphere	Thunderstorms	Ch. 10
11/7 - 11/11	Tropical Weather and Hurricanes (potential no class)	Hurricanes	Tornado Case Studies	Ch. 11
11/14 - 11/19	Air Pollution	Global Climates	Hurricanes	Ch. 12-13
11/28 - 12/2	Climate Change	Climate Change	Climate Change	Ch. 14/Handouts
12/5 - 12/9	Catch up TMYN Post-Test Due	Exam Review	Make Your Own Weather Segment	

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Advice:

I encourage you to seek me out early in the semester if you are falling behind on concepts introduced in class. You must also be self-directed to succeed in this class. This means staying up on readings and doing extra exercises at the end of chapters to be sure you understand the material. I am very willing to help students on individual or group bases as necessary, but you have to ask me to help. Please don't hesitate to ask!

Emergency Evacuation/Shelter-in-Place Procedures

In the event of an emergency evacuation (i.e. fire or other emergency), classes meeting in Science I are directed to reassemble at **Chase Gymnasium** so that all persons can be accounted for. Complete details of the College's emergency evacuation, shelter-in-place, and other emergency procedures can be found at <http://www.oneonta.edu/security>.